FRONT PORCH SERIES
BROADCAST CALLS

Young Children's Learning with Digital Media

by Bill Penuel

QUESTIONS FROM JANUARY 23RD FRONT PORCH SERIES BROADCAST CALL

Q: What does research show when comparing the performance of children in countries/cultures with high access to technology with those who have limited or no access to technology?

A: Access to technology alone is not likely to improve learning outcomes, wherever a child lives. There is no substitutes for guides who can help make the most of technology, both in terms of how to use it and how to learn from it. Wherever there are good teachers available to help, young children can learn.

However, some technologies are more widely available in some countries both because of cost and the availability of things we take for granted, like electricity. But even in countries where technology is difficult to come by, many people successfully take classes using mobile phones! Many companies like Microsoft, Intel, and Texas Instruments work across the globe to make products and curricula available to children and youth.

Within the US, there is a "Digital Divide," defined both by differences in access to technology, and access in opportunities to learn with technology. There is debate as to whether technology can help close divides or whether it exacerbates differences. Most agree technology is here to stay and that it is an important kind of tool to have available for all children to learn.

Q: What impact does secondary parental engagement and support play in how children benefit from digital media in the classroom?

A: We don't know the answer to this question from research; however, we do know that when adults actively co-engage with media with their children, they learn more. The idea that technology can be a bridge between home and school is also a promising one, and it deserves more innovation and research.

Q: What is known about using technology to enhance physical activity in young children?

A: There are very few studies out there that actually deal with physical activity and health as related to technology. I can only speak to some of the applications that exist for older children, which are more around record-keeping and providing feedback to children on their health over time. Those might be applications that could be attempted at the preschool level, but we just don't have very much evidence or research on physical development and computer use. There is quite a concern with whether computer usage effects physical development for very young children especially in terms of restricting their activity. Part of that is probably around whether there's an appropriate limitation of screen time that would be positive for promoting physical development.

Q: Are there any software programs or apps that you would recommend for children with disabilities or special needs?

A: We had very few students with special needs in our study other than those who were language delayed, and those students with language delay benefitted the most, as it turned out. As far as other research studies on children with special needs, the largest body of research has been looking at the use of digital playback to help foster social awareness and development students with autism and Asperger's. Unfortunately, these studies didn't provide really strong evidence one way or the other. However, it's an example of a kind of tool, and maybe one that we wouldn't think of because we don't normally think of video as a technology in the classroom. It does have some intuitive appeal in terms of the theoretical basis, but it doesn't have a strong evidence base at this time. There are just a few studies on this topic, and most do not allow us to conclude one way or another whether this strategy can be effective. It is a promising area of research, however.

Q: Do children in early childhood retain what is learned within point-and-click applications?

A: To the extent that point-and-click applications focus on some of those decoding skills and leading, those would have retention. The evidence is unclear regarding long-term, meaning a year or more later, but with regards to short-term learning for those particular skill sets, there is some evidence to support that older preschoolers can benefit from those kinds of technologies, under the condition that they're implemented with some degree of intensity and for a certain duration.

Q: If you were going to give some suggestions for Head Start programs about how they might work with parents towards increasing parent/child interactions around media, what would you recommend?

A: If you do engage with media in the classroom, one of the things that many of the games on www.PBSKids.org allow kids to do is print out products of their work. This enables them to send things home or to a cell phone, like as a text message to a parent, and this can foster or encourage interaction about something that was learned in school.

The other thing that we've done in the LIFE Center project is worked closely with parent volunteers on co-viewing strategies. So as the teachers are learning co-viewing strategies, we also have been working with parent volunteers in the classroom to do the same, to really encourage the children. This is much more effective than what we call the "pass-back" phenomena, which many parents use, where they pass the technology back as a babysitter - for example in the back seat of the car - but rather the co-engagement strategy. With the co-engagement strategy the parents give the children things to do, like focus attention or ask questions about how to relate to everyday experience. A large part of it is simply building the connection – really using the technology to build a stronger connection between home and school.

Q: Was parent engagement part of your Ready-to-Learn study?

A: It was not an explicit focus, but when we surveyed parents it turned out that the children went home and talked about the intervention with their parents, specifically, many of the science topics covered in "Sid the Science Kid". The parents reported that the kids were talking about these at home, and they did so more in our science study than our literacy study, which leads us to believe that there was a point of connection at home. Of course the benefit of using material from PBS is that they can watch these things at home and they become occasions for children to potentially mention things to parents that they have been doing in school.

Q: Does the use of technology in the classroom take away from opportunities for creative play and social interaction?

A: It doesn't have to – the key is to figure out how technology fits in to a broader curriculum or program that includes lots of opportunities for direct interaction of children with each other and with their teacher, without technology mediation. In some cases, the technology can and does enhance interaction in the classroom. That's something we see especially with curriculum supplements that directly encourage the pausing of video and the discussion of video in the classroom, enabling rich interaction that is grounded in a common or shared experience that kids are seeing on the screen.

Q: Are there applications for young English-language learners that are promising? Do these include features that could help teachers track progress and suggest specific teacher focal points?

A: Our studies involving the PBS curriculum supplement had approximately 30 different languages, and approximately 25-30% of the children were English learners. One of the things that the teachers of these English-language learners really appreciated was the explicit attention to academic language. This is particularly relevant for English learners in domains outside just teaching English, such as domains like math and science, where English learners benefit from the extra language scaffolding. Here, too, is where joint media engagement is really important for English learners for whom the dialogue both of television and of class can often go by very fast.

To have repeated exposure and to pause and make sure the kids follow what's going on are very critical elements. Then as far as kind of tracking or using technology for assessment, this is really a big area that both pre-K and K-12 have been exploring quite extensively. One of the most promising examples is from the Building Blocks curriculum - to the extent that computers can provide diagnostic information. This is a qualitative or verbal description of what kids are struggling with. Not just the number, but really a kind of qualitative description of here's where the kids are doing well, here's what they're struggling with, and here's what you might do next.

Those are the kinds of technology applications that have the most promise. Those that have less promise are ones that simply provide you a number or give you the broadest information in terms of screening - like "this child is in need of…" or, "…is falling behind." While this feedback can be valuable, it's not as valuable as these kinds of diagnostic assessments.

Q: At what age do children approach media with the purpose of learning as compared to playing?

A: Examining the purpose for which children approach media has not been researched. This being said, we do find that there's a large difference in the research on ages 0-2, where we find very few positive effects of media and some negative effects, versus in preschool where the findings are generally more positive with certain kinds of programs. The idea behind many educational programs is that entertainment and engagement are doorways for children to enter into learning. However, part of the design principle behind contemporary educational television is to organize around a compelling narrative and do something that the program developers call "putting learning on the plotline." An example of this would be where the children have to identify a letter and call it out on the screen or do something that is really related to the learning goals or curriculum, in order to advance in the plot. In recent years developers have become highly sophisticated about how to do this.

Q: Are there specific applications for Young English Language Learners that include features to help teachers track child progress and help guide individualized instruction?

A: Many television programs on PBS today promote the development of academic language in specific areas, such as science. For example, Sid the Science Kid teaches vocabulary related to science: "question," "hypothesis," and "observation," for example. Academic vocabulary is something that is very important for English learners—or better, "emerging bilinguals"—need in order to succeed in school. Specialized vocabulary often takes longer to learn than words used in everyday speech.

Q: What is known about the use of one-to-one tablets and interactive whiteboards with children?

A: With both of these technologies, and really any technology, it's useful to this of the computer as a tool, not actually unlike kind of a digital pencil. The question isn't "are interactive white boards and tables good things or bad things?" The question is what are some uses of these tools that could promote learning. Both of these kind of tools allow teachers to direct the attention of multiple children to a shared object of learning. Part of the advantage of being able to direct children's attention to the same thing is that if you're developing language skills, it allows you to have a focal point for a rich conversation. In the case of "Sid the Science Kid," it might direct children to an experiment or an observation that they might make and develop their observation skills.

So the question there is "what do these tools allow you to do that you already are very interest in? What can they do differently than simply directing their attention to the chalkboard?" Some of tit is the ability, for example with a video, to pause and play, or to be able to interact with that whiteboard and to effect it. There is also some research that suggests that the greater interactivity enhances the learning from the digital media.

Q: What evidence is there that demonstrates that young children retain information that is learned through point and click applications?

A: If by "point-and-click" is meant games that require students to practice skills, there is good evidence that software programs can help young people learn very early literacy skills, for example. These are skills that children don't tend to "lose" once acquired.

Q: Are there parameters for how much time children should be spending with computers in their preschool classrooms?

A: There are not guidelines that are research-based. We can say that omst of the programs that are out there generally have no more than about 15 minutes per session, two to three times per week. The key is in organizing that time around a more coherent sequence, as our curriculum supplements have. There is really mixed evidence as to whether simply having children play and do free play on computers can have a positive effect on learning. Whereas research indicates that it is very important to focus on ensuring that children have some minimum amount of time and also follow a sequence, where they have multiple opportunities to develop the same skill.

Q: Are there any recommendations on using media time as a reward for appropriate behavior in the classroom?

A: I think that if it's a reward only, you signal it's something extra and not integral to what it is that you're trying to do. If media is to be incorporated into the learning environment, it's better to integrate it into the regular curriculum and have a variety of rewards, of which media could be one. It's important to think of media as part of a comprehensive curriculum and not just as a reward.

Q: Are there specific applications that promote interactive learning versus simply entertainment?

A: There are a number of kinds of drawing applications that exist out there, and those are ones that deserve to be looked at first. There are also digital forms of traditional block games that could build reading skills using letter blocks. For those of you who know how easy it is to lose those blocks, having those on an app where the blocks don't get lost is hugely beneficial, and they work just like regular blocks. So some of them are just applications that are the same things that we would do in the face-to-face. However, in general, things where you have kids draw, tell stories, or manipulate objects are those that have more interactivity than just video or canned games that children play.

Q: How did the Head Start teachers in your study like the experience of having media in the classroom? Was there hesitation in the beginning?

A: There was tremendous hesitation at the beginning, and I think many are rightly skeptical about media in the classroom and about whether television would create passivity - but through the intervention, most of them changed their minds about technology. Nearly all said that they saw a role for technology, and one of the things that they liked about the supplement is that it helped them develop a more systematic approach to the teaching of literacy through lots of different modalities.

Many of them did not have rich curriculum materials to draw upon to begin with, but rather were working within broad frameworks. They said that the supplement provided them with examples that they were lacking prior to the intervention. When they said supplement materials, they referred both to the video examples of how to teach, for example, letter identification, but also some of the print materials that we provided them.

Q: What is known about using technology to enhance physical activity in young children?

A: Very little, at present. There have been only one or two studies investigating this area of development. There are many who worry that more time on computers might diminish physical activities, moreover. Certainly young children who are using media all the time are not spending that time playing outside, developing gross motor skills, or eating healthy foods!

ADDITIONAL RESOURCES

NAEYC Draft Position Statement on Technology | http://www.naeyc.org/positionstatements/technology

Common Sense Media | http://www.commonsensemedia.org/

Joan Ganz Cooney Center | http://www.joanganzcooneycenter.org/

PBS Kids Island | http://pbskids.org/island/

Ready to Learn Summative Evaluation | http://cct.edc.org/rtl/

KQED Media and Young Children Symposium | http://www.youtube.com/watch?v=IrDAMcbVEU4

RESEARCH MENTIONED DURING THE PRESENTATION

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